

RESEARCH PROBLEM STATEMENT

Problem Title:

Validate Hamburg Wheel Tracker using Field Tested Superpave Mixes

No.: 06.3-6

Submitted By:

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1. Briefly describe the problem to be addressed:

The question is, do Hamburg Wheel Tracking Device (HWTd) testing results represent field performance of a mix?

A number of Superpave mixes have been built over the last ten years. Their field performance and mix design has been cataloged in a previous UTRAC study. Validation of HWTd procedures and test methods is available by reproducing these Superpave mixes in the laboratory and documenting their performance under HWTd testing.

Strategic Goal:☒ Preservation☐ Operation☐ Capacity☐ Safety

(Check all that apply)

2. List the research objective(s) to be accomplished:

1. Forensically reproduce superpave mix designs used in UDOT projects.
2. Subject the mixes to the current HWTd test methods.
3. Develop bracketing tests using temperature and loading variables.
4. Analyze correlations between HWTd test results and field performance.

3. List the major tasks required to accomplish the research objective(s):

Estimated person-hours

1. From previous research, Identify candidate pavements and mix designs.
2. Categorize pavement performance into reliable, moderately reliable and unreliable pavements.
3. Identify loading conditions on candidate pavements.
4. Obtain current UDOT HWTd test protocols. Identify bracketing procedures using temperature and loading variables
5. Reproduce the mix designs and test them under the above procedures.
 - First stage – use single lab
 - Second stage – incorporate multiple labs
6. Evaluate the results.
7. Propose test protocol for major binder grades, recycled asphalt (RAP) content and loadings.

4. Outline the proposed schedule (when do you need this done, and how we will get there):

Would like to see this begin during (2006) construction season with results by March 2008.

5. Indicate type of research and / or development project this is:Large: ☒ Research Project ☐ Development ProjectSmall: ☐ Research Evaluation ☐ Experimental Feature ☐ New Product Evaluation ☐ Tech Transfer Initiative :☐ Other _____**6. What type of entity is best suited to perform this project (University, Consultant, UDOT Staff, Other Agency, Other)?**

Consultant-University-UDOT Combination

7. What deliverable(s) would you like to receive at the end of the project? (e.g. useable technical product, design method, technique, training, workshops, report, manual of practice, policy, procedure, specification, standard, software, hardware, equipment, training tool, etc.)

1. Interim reports to indicate current experience and best to date assumptions.
2. Final report to summarize data and provide proposed test procedures for binder grade, RAP content and loading.
 - a. Focus on long-term projections
 - b. Include more than pass-fail judgements on predictions
3. Develop precision criteria
4. Identify possible variations to current 10 mm acceptance criteria

8. Describe how will this project be implemented at UDOT.

The test methods and limits would be incorporated into HWTED test protocols and into mix verification requirements/specifications. Consider for use in dispute resolutions,

9. Describe how UDOT will benefit from the implementation of this project, and who the beneficiaries will be.

By assuring that the HWTED testing results reflect field performance, UDOT will obtain pavements that are applicable to their service conditions. Reliable test results will give the department confidence that it is spending the appropriate amount of money to get the results it is planning for.

10. Describe the expected risks, obstacles, and strategies to overcome these.

Minimal number of entities with a HWTED. U of U has one.

11. List the key UDOT Champion of this project (person who will help Research steer and lead this project, and will participate in implementation of the results): Kevin VanFrank UDOT Engineer for Asphalt Materials (801) 965-4426

12. Estimate the cost of this research study including implementation effort (use person-hours from No. 3): \$60,000

13. List other champions (UDOT and non-UDOT) who are interested in and willing to participate in the Technical Advisory Committee for this study:

Name	Organization/Division/Region	Phone	Attended UTRAC?
A) Tim Biel	UDOT Central Materials	965-4859	y
B) Kevin VanFrank	UDOT Central Materials	965-4423	
C) Mark White	UDOT Central Materials	965-4295	
D) Stephan Charmont	Sem Materials		
E) Doyt Bolling	Utah LTAP		
F) Jim Cox	UDOT Region Three Materials Engineer – U of U Student		
G) Pedro Romero	U of U		

14. Identify other Utah agencies, regional or national agencies, or other groups that may have an interest in supporting this study:

Possible FHWA Pooled Fund Topic